CHAPTER 2: MACHINE SUMMARY

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1. Features of the RISOGRAPH FR

THREE FEATURES OF FR

SC Built-in (FR3950-α)

SC function built-in model will be lined up for FR series. It makes much easier to link a FR to the PC or Mac, just plug in a FR direct from the computer. This new model will give you persuasive selling point to today's computerized office as well as providing advanced image of Riso.

Quieter Operating Sound

Operating sound of the FR never disturb your work. We have succeeded in reducing the sound about 25 %, while maintaining durability of the GR series. This sound level will be accepted for the office equipment.

Improved Print Quality (New Ink and Master)

The print quality of the FR is noticeably improved with the refined TPH. The high performance new ink and high sensitive new master have been developed for best matching to produce high print quality. In addition, FR series does not required Image Enhancement mode, because it has high performance image processing program which is newly developed. Therefore, small characters and fine lines will be precisely reproduced.

Other New Functions

There are another powerful useful features which are newly added.

***2, 4, 8 and 16 up**

4 kinds multi up function has been installed.

***4 kinds screen dots**

4 kinds screen dots mode(Fine, small, medium and large) has been newly added for vireos picture processing.

***Electrical feeding tray adjustment(A3 Machine only)**

The side way print position can be adjusted ±10mm from the operation panel.

Auto Power Off

Environment-friendly RISOGRAPH requires no warming up. If it is left turned on, the auto shutoff function(OFF 5/10/30 minutes) can be set. Since the controller uses another power supply, the data can be received if the main body is turned off.

Preventive Maintenance Indication

Enter the "number of masters/print sheets" in the test mode. The overhaul and periodic maintenance timings are notified to you by displaying "MAINTENANCE <MASTER>/<PRINT> CALL SERVICE." on the liquid crystal display panel. In order to run RISOGRAPH in the better condition, keep close contact with an administrator at installation site.

2. Specifications

FR3950/FR3950α

- **Processing**
  High-speed automatic digital scanning
  Fully automatic, thermal screening duplicating system
- **Time to First Copy**
  Letter or A4 original / Approx. 17 seconds
  Ledger or A3 original / Approx. 23 seconds
- **Print Speed**
  5 selectable print speeds (60, 80, 100, 110, 120 sheets/min.)
- **Scanning Resolution**
  400 dpi
- **Original Type**
  Bound documents or sheets
- **Original Size**
  - **For the Stage Glass:**
    Max./ A3 (297 x 420mm) or Ledger (11 x 17 inch)
    Min./ Business card (50 x 90mm) or 2 x 3 1/2 inch
  - **In the optional ADF Unit:**
    Max./ A3 (297 x 420mm) or Ledger (11 x 17 inch)
    Min./ B6 (128 x 182mm) or 5 x 7 inch
- **Paper Size**
  Max./ A3 (297 x 420mm) or Ledger (11 x 17 inch)
  Min./ A6 (100 x 148mm) or 4 x 6 inch
- **Original Weight**
  - **For the Stage Glass:**
    10 kg (22 lbs.) or less
  - **In the optional ADF Unit:**
    Max./ 110 g/m^2 or 28-lb bond
    Min./ 50 g/m^2 or 15-lb bond
- **Paper Weight**
  Max./ 210 g/m^2 or 110-lb index
  Min./ 46 g/m^2 or 13-lb bond
- **Image Area**
  A3 Drum / 290 x 412mm
  Ledger Drum / 10.7 x 16.5 inch
- **Paper Capacity**
  1000 sheets in feed and receiving tray
  [Based on 64 g/m^2 (16-lb bond) paper]
- **Optional ADF Capacity**
  50 originals
- **Machine Weight**
  FR3950 : Approx. 118 kg (260 lbs.)
  FR3950α : Approx. 120 kg (264 lbs.)
- **Dimensions**
  [W x D x H]
  In use / 1,320 x 675 x 825mm
  52.0 x 26.6 x 32.5 inch
  In storage / 745 x 675 x 705mm
  29.3 x 26.6 x 27.8 inch
- **Power Source**
  <Requirements>
  Picture Model: 220 to 240 VAC, 50/60 Hz <3.0A>
  USA Model: 120 VAC, 60 Hz <5.0A>
  Metric Models: 110 VAC, 60 Hz <5.0A> - 110-V model
  220 to 240 VAC, 50/60 Hz <3.0A> - 220-V model

- **Reduction Parameters** 4 selectable reductions (94%, 87%, 82% and 71%)
  [94%, 77%, 75% and 66% in USA models]
- **Enlargement Parameters** 3 selectable enlargements (141%, 122% and 116%)
  [141%, 127% and 121% in USA models]
- **Zooming Parameters** 50% to 200%
- **Features** Photo processing mode, Duo processing mode, Dot-screening (4 patterns), Multi-Up printing (2,4,8 and 16 up), Bound Book precessing, Automatic idle, Scanning Contrast Adjustment (auto/manual), Auto Print Density Control, Confidential mode, Auto Power-off, Memory Mode (Memory storage of frequently used settings), Programmed printing (Programmable print grouping), Auto Ejection Guide Control, Initial Setting Customization, Interface Capabilities, Preventive Maintenance Indication, Precision Stacking Tray
- **Optional Accessories** Color drum (Cylinder), Digitizer III, Sorter TM5000, Sorter TM2500, Sheet Feeder SF3000, Job Separator III, Key/Card Counter III, Computer Interface (SC3500/5500/7700)

FR2950

- **Processing** — High-speed automatic digital scanning
  Fully automatic, thermal screening duplicating system
- **Time to First Copy** — Letter or A4 original / Approx. 17 seconds
  Ledger or A3 original / Approx. 23 seconds
- **Print Speed** — 5 selectable print speeds (60, 80, 100, 120, 130 sheets/min.)
- **Scanning Resolution** — 400 dpi
- **Original Type** — Bound documents or sheets
- **Original Size**
  - **For the Stage Glass:**
    Max./ A3 (297 x 420mm) or Ledger (11 x 17 inch)
    Min./ Business card (50 x 90mm) or 2 x 3 1/2 inch
  - **In the optional ADF Unit:**
    Max./ A3 (297 x 420mm) or Ledger (11 x 17 inch)
    Min./ B6 (128 x 182mm) or 5 x 7 inch
- **Paper Size** — Max./ A3 (297 x 420mm) or Ledger (11 x 17 inch)
  Min./ A6 (100 x 148mm) or 4 x 6 inch
- **Original Weight**
  - **For the Stage Glass:**
    10 kg (22 lbs.) or less
  - **In the optional ADF Unit:**
    Max./ 110 g/m^2 or 28-lb bond
    Min./ 50 g/m^2 or 15-lb bond
- **Paper Weight** — Max./ 210 g/m^2
  Min./ 46 g/m^2
- **Image Area** — B4 Drum / 251 x 357mm
  A4 Drum / 198 x 286mm
  Legal Drum / 7.9 x 13.5 inch
- **Paper Capacity** — 1000 sheets in feed and receiving tray
  [Based on 64 g/m^2 (16-lb bond) paper]
- **Optional ADF Capacity** — 50 originals
- **Machine Weight** — Approx. 112kg (247 lbs.)
- **Dimensions**
  [W x D x H]
  In use / 1320 x 660 x 825mm
  52.0 x 26.0 x 32.5 inch
  In storage / 745x 660 x 705mm
  29.3 x 26.0 x 27.8 inch
- **Power Source**
  <Requirements>
  Picture Model: 220 to 240 VAC, 50/60 Hz <3.0A>
  USA Model: 120 VAC, 60 Hz <5.0A>
  Metric Models: 110 VAC, 60 Hz <5.0A> - 110-V model
  220 to 240 VAC, 50/60 Hz <3.0A> - 220-V model

- **Reduction Parameters** 4 selectable reductions (94%, 87%, 82% and 71%)
  [94%, 77%, 75% and 66% in USA models]
- **Enlargement Parameters** 3 selectable enlargements (141%, 122% and 116%)
  [141%, 127% and 121% in USA models]
- **Zooming Parameters** 50% to 200%
- **Features** Photo processing mode, Duo processing mode, Dot-screening (4 patterns), Multi-Up printing (2,4,8 and 16 up), Bound Book processing, Automatic idle, Scanning Contrast Adjustment (auto/manual), Auto Print Density Control, Confidential mode, Auto Power-off, Memory Mode (Memory storage of frequently used settings), Programmed printing (Programmable print grouping), Auto Ejection Guide Control, Initial Setting Customization, Interface Capabilities, Preventive Maintenance Indication, Precision Stacking Tray
- **Optional Accessories** Color drum (Cylinder), Digitizer III, Sorter TM5000, Sorter TM2500, Sheet Feeder SF3000, Job Separator III, Key/Card Counter III, Computer Interface (SC3500/5500/7700)

3. Product Compatibility

Accessory Compatibility chart

PRODUCT \ APPLICABLE MODEL	FR3950α	FR3950	FR2950	GR
FR Black Drum A3	●	●	×	×
FR Color Drum A3	●	●	×	●
FR Black Drum B4/A4/L	×	×	●	×
FR Color Drum B4/A4/L	×	×	●	●
FR Black A4 WIDE Drum	●	●	×	×
FR Color Drum A4 WIDE	●	●	×	●
ADF UNIT III	●	●	●	△
Sheet Feeder SF3000	●	●	●	●
TM5000 Sorter	●	●	●	●
TM2400 Sorter	×	×	×	△
TM2500 Sorter	●	●	●	●
DIGITIZER III (S)	●	●	●	□
Key/Card Counter III (S)	●	●	●	●
Job Separator III	●	●	●	●
Interface Board III (S)	●	●	●	●
SC 3500, 5500, 7500, 7700	×*1	●	●	●*2

● : Fully Compatible
× : Not Compatible
×*1 : Built-in SC Function
●*2 : Refer to SC Technical Manual
△ : Compatible (excludes GR3770)
□ : Compatible (GR3770, GR3750, GR2750)

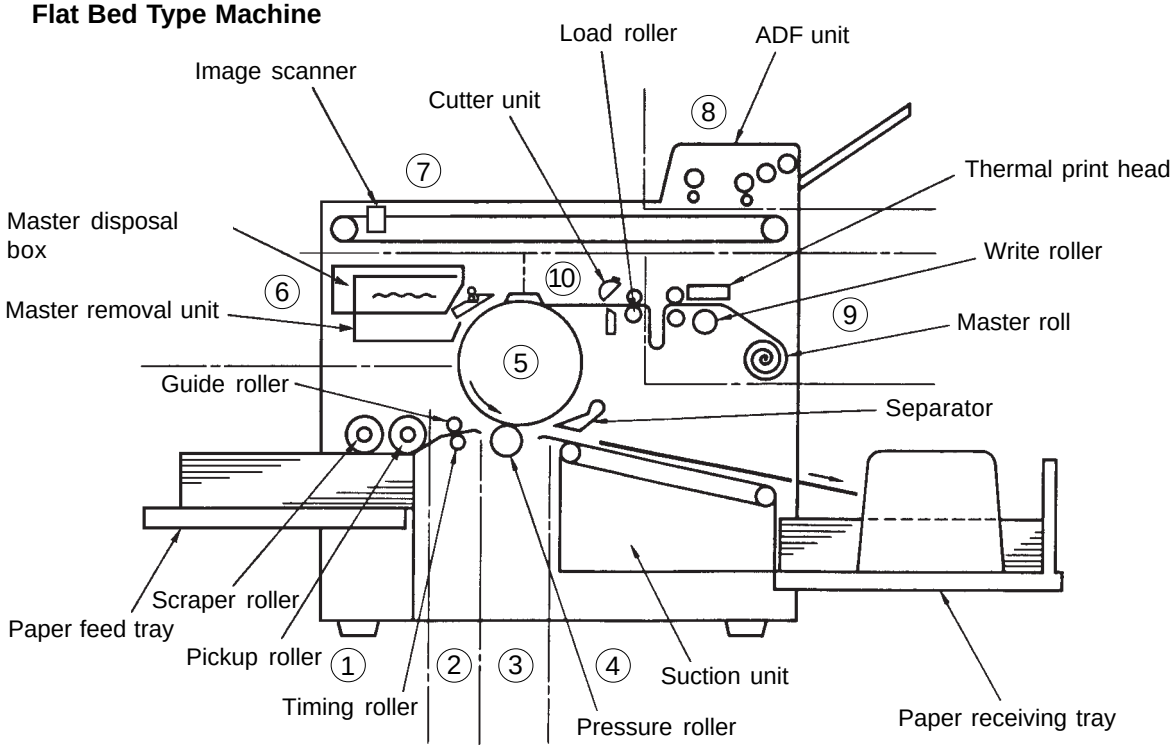
Consumables Compatibility Chart

APPLICABLE MODEL / PRODUCT	FR3950/α	FR2950	GR
RISOGRAPH FR MASTER 96W	●	×	×
RISOGRAPH FR MASTER 95	×	●	×
RISOGRAPH FR INK (BLACK)	●	●	×
RISOGRAPH FR INK (RED)	●	●	●
RISOGRAPH FR INK (BLUE)	●	●	●
RISOGRAPH FR INK (BROWN)	●	●	●
RISOGRAPH FR INK (GREEN)	●	●	●
RISOGRAPH FR INK (YELLOW)	●	●	●
RISOGRAPH FR INK (GRAY)	●	●	●
RISOGRAPH FR INK (LIGHT GRAY)	●	●	●
RISOGRAPH FR INK (MARINE RED)	●	●	●
RISOGRAPH FR INK (BRIGHT RED)	●	●	●
RISOGRAPH FR INK (BURGUNDY RED)	●	●	●
RISOGRAPH FR INK (FEDERAL BLUE)	●	●	●
RISOGRAPH FR INK (MEDIUM BLUE)	●	●	●
RISOGRAPH FR INK (PURPLE)	●	●	●
RISOGRAPH FR INK (TEAL)	●	●	●
RISOGRAPH FR INK (FLAT GOLD)	●	●	●
RISOGRAPH FR INK (ORANGE)	●	●	●
RISOGRAPH FR INK (HUNTER GREEN)	●	●	●
* ORDER COLORS	●	●	●
RISOGRAPH GR INK (BLACK)	×	×	●*1
RISOGRAPH GR INK HD (BLACK)	×	×	●*2

●*1:Compatible (excludes GR3770)
●*2:Compatible (GR3770)

4. Cross Sectional View

Flat Bed Type Machine



① **First Paper Feed Area:** Feeds single sheets of paper to the second paper feed area via the Scraper roller, Pickup rollers, and Stripper plate.

② **Second Paper Feed Area:** Controls the vertical print position and feeds paper to the print area via the Timing and Guide rollers.

③ **Print Area:** Uses the Pressure roller to press paper against the master on the Drum.
The Drum rotates with the Pressure roller and prints an image on paper.

④ **Paper Ejection Area:** Separates a printed paper from the Drum, and transports it onto the Paper receiving tray.

⑤ **Drum Section:** Supplies the Drum surface with Ink from an Ink bottle.

⑥ **Master Disposal Area:** Separates a used master from the Drum and disposes it into the Master disposal box.

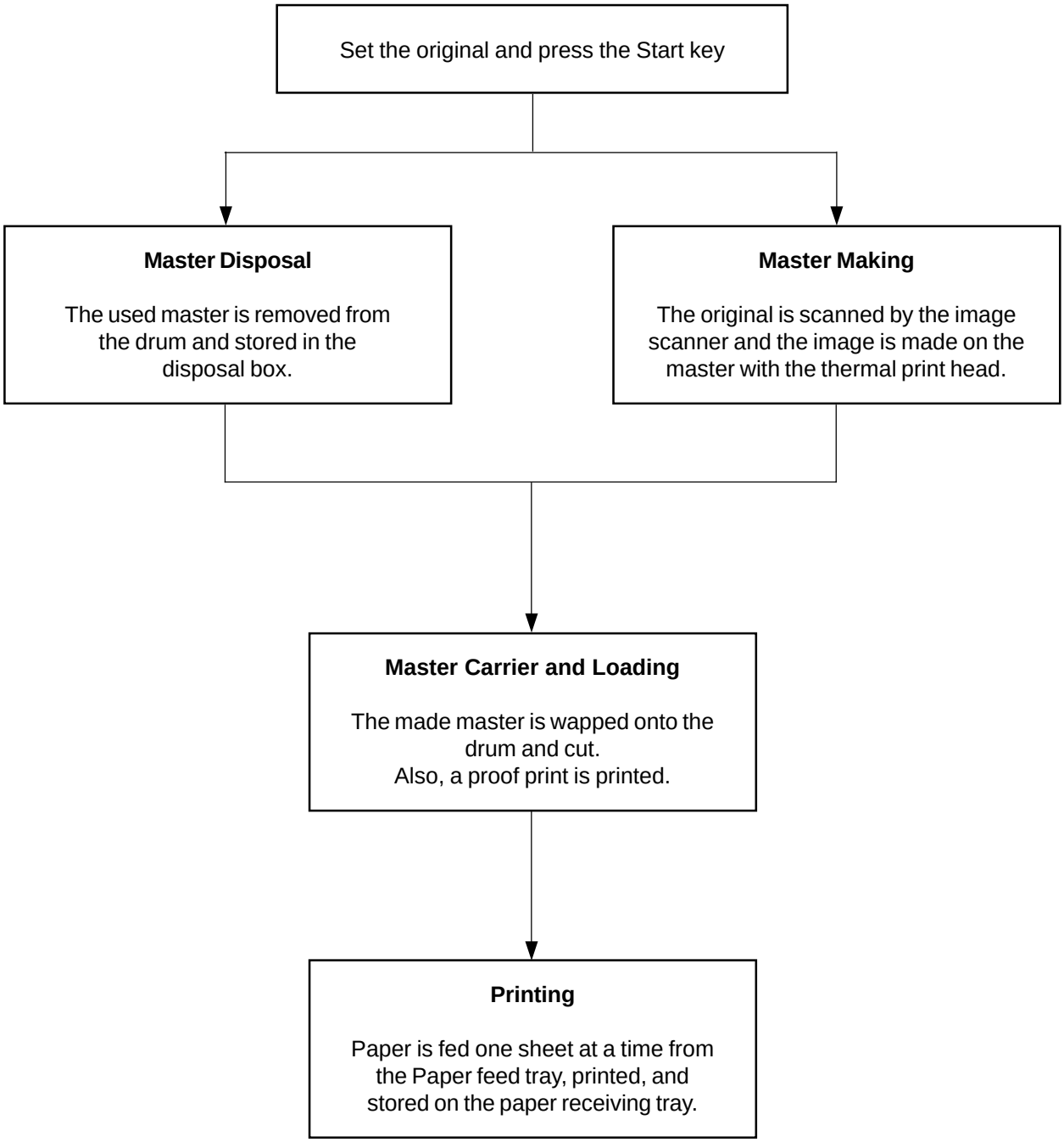
⑦ **FB Image Scanning Area:** Scans an original on the Stage glass by moving the Image scanner and converts the image information into digital data.

⑧ **ADF Image Scanning Area:** Carries an original and scans it with the Image scanner and converts the image information into digital data.

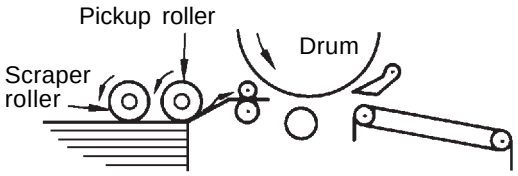
⑨ **Master Making Area:** Makes a master with the Thermal print head.

⑩ **Carrier and Clamp Area:** Feeds the prepared master material to the Drum, loads it on the Drum, and cuts it to an appopriate length.

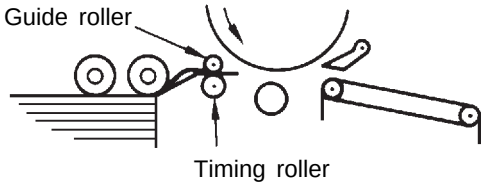
5. Machine Operations


Set the original and press the Start key
Master Disposal
The used master is removed from the drum and stored in the disposal box.
Master Making
The original is scanned by the image scanner and the image is made on the master with the thermal print head.
Master Carrier and Loading
The made master is wapped onto the drum and cut.
Also, a proof print is printed.
Printing
Paper is fed one sheet at a time from the Paper feed tray, printed, and stored on the paper receiving tray.

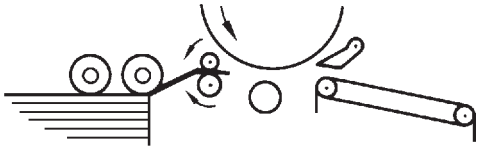
6. Paper Feed and Receiving



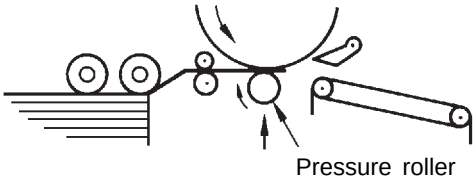
The Drum is rotated and a sheet of paper is fed from the first paper feed area to the second paper feed area by the Scraper and Pickup rollers.



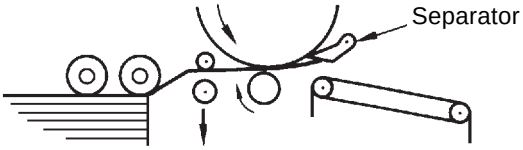
The paper feed to the second paper feed area is stopped by the Guide and Timing rollers to form a buckle. The paper then waits until the rotation of the Guide roller starts.



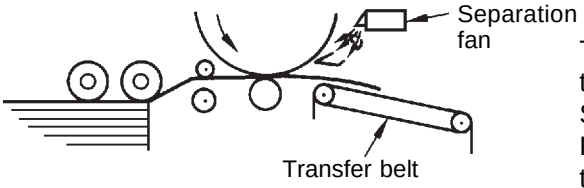
The Guide and Timing rollers in the second paper feed area are rotated and the paper is fed to the print area.



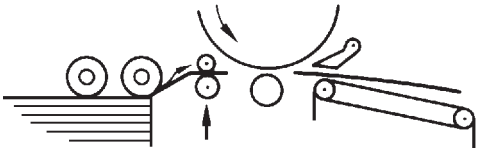
While the paper is being fed from the second paper feed area, the Pressure roller is raised and printing starts.
(The Pressure roller contacts the Drum and starts rotating.)



After the Pressure roller contacts the Drum to start printing, the Separator approaches the Drum and the Timing roller goes down.
(The paper is then transferred by the rotation of the Drum.)

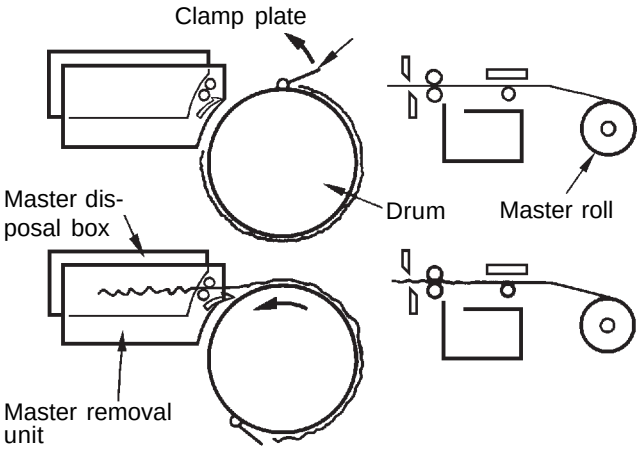


The printed paper is separated from the Drum by the Separator with a help of the air blow from the Separation fan and is transported onto the Paper receiving tray by the Transfer belts using the Suction fan.



The Timing roller contacts the Guide roller to feed the next sheet of paper.

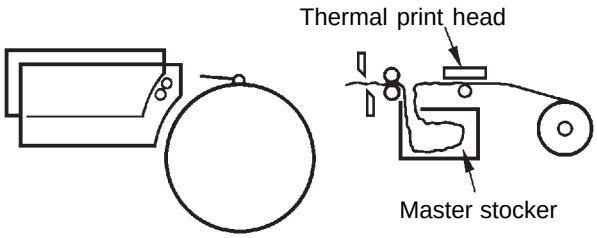
7. Master Removal and Feed



Master Removal

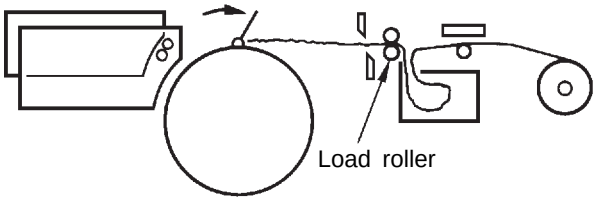
When the "START" button is pressed for master-making, the Drum is rotated to the home position and the Clamp plate is opened.

The Master removal hooks are activated, and the Drum is rotated a turn to remove a used master into the Master disposal box.



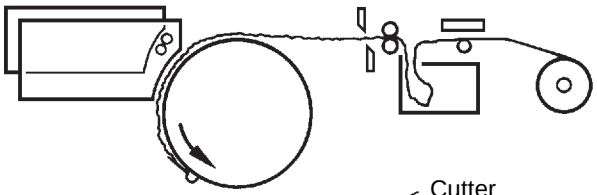
Master Making

At the same time the used master is removed from the Drum, the Image scanner scans an original and the Thermal print head makes a new master and stocks the new made master in the Master stocker.

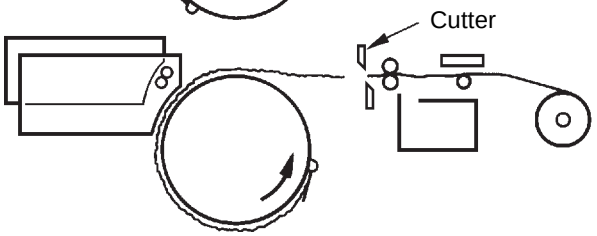


Master Loading

The lead edge of the master advances to the Drum, and the Clamp plate is closed to hold the master.



The Drum is rotated to load the master on itself.



Master loading continues until the prime surface of the Drum is covered, and then the Cutter cuts the master while the Drum still rotating.